In the book before us, which is designed for teachers, the author has selected for study the morning glory, the "nasturtium" [Tropæolum], the "jewel weed" [Impatiens], the scarlet geranium, and the hyacinth. The purpose is to use these plants as indicative of the problems that flowering plants suggest, and the spirit of the work is of the best. There is constant insistence that the plants are to be regarded as living things, engaged in a variety of very interesting work. The usual pedantic terminology, that has so long made the school study of flowering plants an exercise in definition of technical terms, is in the main suppressed, and certainly is never obtrusive. Suggestive comparisons abound, by which interest may be sustained and structures understood. The book will certainly prove very useful to the teachers it is intended to serve; but is it not possible to make such work clear and attractive to children without obscuring the facts? For example, when we are told that "if a pollen grain can join an ovule, both of them will live and form a seed; but if the pollen grain cannot join an ovule both must die," there may be a sense in which this is true, but the real impression apt to be left will be far enough from the truth. And the truth finds not much clearer expression in the statement, "Once on the pistil, the substance of the pollen grain passes down through the style to the ovary, where it unites with an ovule, thus giving it, as we may say, extra vitality." Of course the sexuality of the stamens and pistils is strongly brought out, and much made of it. We cannot expect the actual non-sexual nature of these organs to be made clear to children, but there would seem to be no necessity for so persistently impressing an idea which must later be abandoned. The reader of the book would judge, moreover, that all plants do the work of photosyntax, and the statement is made that "it is the chlorophyll which does the eating for the plant." In this same connection it is perhaps interesting to note, in a summary on the green part of the leaf, that "carbon dioxide is injurious to animal life, while oxygen is necessary to it; hence men and all animals are dependent upon the plant life for the air they breathe, and consequently for their existence. But, on the other hand, animals breathe out carbon dioxide, which the plant needs as food; hence the plant is dependent upon the animals for its existence." These quotations are taken quite at random, but they will serve to illustrate that dangerous tendency to philosophical speculation which, in the absence of a full knowledge of the facts, is never safe. Is it not possible to interest children by banishing speculation and sticking to the facts? We believe that it is.—J. M. C.

MINOR NOTICES.

PROFESSOR F. LAMSON SCRIBNER has issued, as Bulletin no. 7 of the Division of Agrostology, a book of illustrations entitled *American Grasses*. The author has had in preparation for some time a *Handbook of North*

merican Grasses, in which all the North American species are to be figured, but as it will be some time before the remaining figures can be engraved, he has now published three hundred of those now completed. A useful introduction clearly characterizes the family and the tribes in the light of the most recent studies. Each page is occupied by the illustration of a single species, below which a brief description is printed, just such a description as would occur in a manual, with habitat, range, necessary synonymy, etc. The 300 species presented represent 98 genera, and all of the 12 tribes occurring in the United States excepting Bambuseæ. Professor Scribner's drawings are well known for their excellence, and the bulletin will certainly be very valuable to students of grasses.—J. M. C.

IT SEEMS STRANGE to open a manual bearing the date of 1897, and to discover that the plants are arranged according to the Linnæan system. This is true, however, of the *Excursionsflora*[8] of Dr. Karl Fritsch; and why is not the plan an excellent one when facility in finding a name is the only end in view? It has long seemed to us that editions of field manuals and herbarium manuals with Linnæan keys might be very useful. In the vast majority of cases a manual is consulted to discover a specific description, and the most rapid way of discovering the description is a thing to be desired. Besides, most of our manual keys are already artificial. It is not certain, therefore, that the manual before us is to be regarded as an "ancient type," but rather a genuine modern type, which recognizes the real thing sought and then selects the quickest way of getting it.—J. M. C.

MR. F. V. COVILLE has published some notes[9] upon the plants used by the Klamath Indians of Oregon. In the list given there are a few plants which give a suggestion of usefulness in our own arts and industries. Among these may be mentioned the yellow pine lichen, which produces a beautiful canary yellow dye; the Rocky mountain flax, which furnishes a strong fine fiber; and several of the tuberous rooted perennials of the parsley family, which make palatable and nutritious food.

MR. THOMAS HOWELL has begun the publication of a new American flora[10] covering a region that has not been provided with a manual. The area is defined as "north of California, west of Utah, and south of British Columbia," which means that it is chiefly a flora of Washington, Oregon, and

[8] FRITSCH, DR. KARL.—Excursionsflora für Oesterreich (mit Ausschluss von Salisien, Bukowina und Dalmatien). Mit theilweiser Benützung des "Botanischen Excursionsbuches" von G. Lorinser. Small 8vo. pp. lxxii + 664. Wien: Carl Gerold's Sohn, 1897.

[9] Contrib. Nat. Herb. 5: 87–108. 1897.

[10] HOWELL, THOMAS.—A flora of northwest America. Vol. I. Fasc. 1 [Ranunculaceæ to Rhamnaceæ]. 8vo. pp. 112. Portland, Oregon: The author. 50 cents.

Idaho. There was certainly need for such a manual, and Mr. Howell is very familiar with the plants of the region. Very modestly he describes the work as a compilation, which manuals almost of necessity are. There is no escape from this compilation when such an extensive range of plants is to be included, even though it results in perpetuating countless errors. Mr. Howell's experience, however, has enabled him to inject a large amount of personal observation into the work, and, what is best of all, field observation. He takes a somewhat radical position in reference to varieties, observing "that if a plant is sufficiently distinct from others to deserve a name it is better to have it described as a distinct species than as a variety of some other species." Accordingly, nearly all of the published varieties of the region have been raised to specific rank. The book cannot help but be a very useful addition to our local floras, and certainly of great service to those in the northwest who are interested in their native plants.—J. M. C.

A THIRD FASCICLE of the enumeration of the flora of Costa Rica has appeared.[11] A second enumeration of the lichens is made by Dr. J. Müller, containing 281 species, 60 of which are new. A second paper on the mosses, by Renauld and Cardot, contains 62 species, 25 of which are new, *Pirea* and *Leucodoniopsis* (both Pleurocarpæ) being new genera. These two papers appeared in *Bull. Soc. Roy. de Bot. de Belg.* 31 :—. 1893. In the same journal, 35 :—. 1896, the remaining papers of the third fascicle appeared as follows: "Fungi," by Bommer and Rousseau, containing 85 species, 16 of them new; "Filices," by Bommer and Christ, introduced by a general discussion of the pteridophyte flora and containing 251 species, 21 of which are new; "Lycopodiaceæ," by Christ, containing 12 species; "Selaginellaceæ," by Christ, with 16 species; "Begoniaceæ," by C. DeCandolle, with 22 species, 5 of which are new; "Convolvulaceæ," by Hallier, with 23 species; and a second fascicle of "Compositæ," by Klatt, with 105 species, 13 of which are new.—J. M. C.

A TWELFTH *Contribution to the Life Histories of Plants*[12] has been published by Mr. Thomas Meehan. The subjects are sixteen in number, and really represent a fascicle of short papers written long ago. They consist of brief observations which are made the basis of speculative discussions. The subjects are as follows: "Fecundity of *Heliophytum Indicum*," "Origin of the forms of flowers," "Spines in the citrus family," "Flowers and flowering of *Lamium purpureum*," "Cleistogamy in Umbelliferæ," "Rhythmic growth in plants," "Pellucid dots of Hypericum," "Honey glands of flowers," "Varying phyllotaxis in the elm," "Special features in a study of

[11] DURAND, TH. and PITTIER, H.—Primitiæ Floræ Costaricensis. Troisième fascicule. Pp. 297. Bruxelles: Jardin botanique de l'Etat. 1896.

[12] Proc. Philad. Acad. —: 169–203. 1897.

Cornus stolonifera," "Folial origin of cauline structures," "Polarity in the leaves of the compass and other plants," "Hybrids in nature," "Origin and nature of glands in plants," "Nutrition as affecting the forms and their floral organs."—J. M. C.

MR. W. S. BLATCHLEY, state geologist of Indiana, has just published a catalogue of pteridophytes and spermatophytes of Vigo county. This county borders upon the Wabash river, and its flora is one of the most interesting in the state. The full notes of Mr. Blatchley with reference to range and conditions of growth make the catalogue more than a bare list. It is issued as a reprint from the twenty-first annual report of the Department of Geology.—J. M. C.

THE SYNOPSIS of the fleshy fungi and directions for their collection, which Professor L. M. Underwood[13] embodied in the closing dozen pages of the bulletin of the Alabama Experiment Station, recently published on the fungi of that state, have been reprinted and neatly encased in a manilla cover by the Cambridge Botanical Supply Co. The directions for collecting and preserving are clearly and concisely stated in a way to enable one to intelligently avoid the common error of accumulating useless or worse than useless specimens. The genera are provided with keys, some important bibliographical references, and brief notes. The whole forms a valuable aid to collectors of this class of plants.—J. C. A.

IN THESE DAYS, when the science of botany is becoming more and more serious, it is refreshing now and then to catch the flavor of the fields from the standpoint of sentiment rather than of biology. Perhaps it is better to call such a standpoint sentiment suffused with biology. Such a combination is certainly more to be commended than biology suffused with sentiment. No botanist is better able to take the reader afield than Professor W. W. Bailey. His little book "Among Rhode Island wild flowers" has met with a hearty welcome, and now another from his pen extends the view throughout New England.[14]

The months are taken in order, beginning with March, and the prominent plants of the New England flora delightfully described. The style is always sprightly, and the plants mentioned are not so numerous as to degenerate into a catalogue-like monotony.

Special sections are devoted to New England alpines, and plants of the seashore; nor is the winter condition of plants neglected. Aside from the pleasure that such a work brings to the general lover of nature, it will be helpful to teachers who desire help in the nature study.—J. M. C.

[13] UNDERWOOD, L. M.—Suggestions to collectors of fleshy fungi. 8vo. pp. 14. Cambridge: Camb. Bot. Sup. Co., 1897. 25 cents.

[14] W. WHITMAN BAILEY.—New England wild flowers and their seasons. Cloth, 16mo. pp. 150. Providence, R. I.: Preston & Rounds. 1897. 75 cents.

THE PUBLICATION of such papers as the recent "Rearrangement of the North American Hyphomycetes," by Messrs. Pound and Clements, cannot but be a matter of regret to all who hope to see some element of order introduced into the existing chaos which confronts anyone who attempts to concern himself with a systematic study of the fungi. Although the paper is in some respects less open to censure than one of its predecessors (*Botanical Studies*, XXVIII) which was noticed in a former number of the GAZETTE, both represent a type of botanical activity which is to be deplored. For, although the preparation of "Rearrangements" may be a comparatively harmless process so long as it does not, by increasing the existing number of synonyms, serve to increase the difficulties of the subject rearranged through the further complication of a confusion already sufficiently confounded, the right to make such wholesale changes in synonymy as are here proposed can be conceded only to the skilled monographer who shows a knowledge of his subject sufficiently wide and accurate to give weight to his opinions. That these conditions have not been fulfilled in the present instance is indicated by even a cursory examination, the errors of compilation alone, although they are matters of no consequence in themselves, being sufficient to throw doubt on its accuracy in other respects. Taking a few instances at random we find the genus Fusidium credited with about one-quarter of the species "reported" from this country; Cylindrium and Monilia with about one-half, and so on; even the smaller genera being not always correctly represented. It seems incredible that anyone familiar with Corda's figures of Hyphomycetes, or who sees the *Bulletin of the Mycological Society of France*, should retain the genus Synthetospora which already has three synonyms; while discarding entirely as "related to Aspergillus" a genus like Thaxter's Gonatorrhodiella in which the indeterminate basipetal spore formation of the last-mentioned genus is replaced by one that is determinate and acropetal, not to mention other differences. If no place is left among the Hyphomycetes for filing "Aspergillus" forms, whether they be conditions, for instance, of unknown species of "Eurotium" or Cephalotheca, or even of other genera, it is not altogether clear why corresponding places should be maintained for filing other forms, which like those just mentioned are for the most part imperfectly known, while they may contain species connected with more than one genus of "perfect" forms. The rearrangement of species, if anyone may judge from a hasty examination of the lists of new combinations given, seems also based on a none too intimate knowledge of the forms with which such liberties are taken. In a genus like Oospora, which has no characters to speak of, it is a matter of little concern whether we use this name or Alysidium to designate a collection of forms concerning the position and relationships of which we are for the most part ignorant; but in a group like the Helicosporeæ there is no excuse for incorrectly mixing up species unknown to the rearranger; as has for example been done by putting *Helicosporium Curtisii*

or *H. Muelleri* in a genus supposed to be distinguished by hygroscopic spores. The retention without comment of the genus Stigmatella (with Sphaerocreas as a synonym!), and the extraordinary disposition of the genus Illosporium, have also been pointed out by Thaxter in a recent number of the GAZETTE, and serve still further to enforce our contention that work of this kind should be left to the skilled monographer, and can otherwise only serve to complicate difficulties already sufficiently great, when done in connection with a hastily prepared and local "List."—***

NOTES FOR STUDENTS.

MR. M. A. BRANNON has completed his study of the structure and development of *Grinnellia Americana*.[15] The work was done at Wood's Holl, the author occupying the table of the Missouri Botanical Garden. The chief points developed in the study may be summed up as follows: This alga is distinctly an American marine form, flourishing in quiet waters. There are no distinct differences in the vegetative structure of the different fronds, which separate from their holdfasts late in summer, and rising to the surface effect a wide distribution of the fruiting bodies. The cells are nucleated and are connected by protoplasmic pits, except the cells of the procarp, which are connected by open pores. Adult plants are very sensitive to intense light and increase of temperature, but will not grow in shady places. Mutilated plants show great powers of proliferation. The carpospores and tetraspores are very favorable for the study of germination, for while they respond readily to external conditions they are hardy enough to allow a wide range of treatment. The non-motile antherozoids are developed in great numbers by the abstriction of the terminal portion of the apical cells of the antheridia. The cystocarp begins to develop by the modification and apical growth of a joint-thallus-cell. The procarp consists of three cells, and is developed from the supporting thallus-cell in the base of the young cystocarp, and its apical cell becomes the carpogonium. The fertilized contents of the carpogonium are transferred through the open pores connecting the procarpic cells to the supporting thallus-cell, which becomes the central one of the five auxiliary cells. The trichogyne is often branched, and fusion of the antherozoid with it results in great stimulation to the thallus-cell at the base of the procarp, the trichogyne itself being a very evanescent organ. The sporiferous filaments are developed as chains of central cells, from whose branches the carpospores arise acropetally.—J. M. C.

M. PAUL PARMENTIER has published an elaborate paper[16] containing the results of his researches in the anatomy and taxonomy of "Onotheraceæ and

[15] Ann. Bot. **11**: 1–28. *Pl. 1–4.* 1897.

[16] Ann. Sci. Nat. Bot. VIII. **3**: 65–149. *pl. 1–6.* 1896.